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Yorick

The CDRH Bionic Skeleton

U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
Public Health Service
Food and Drug Administration

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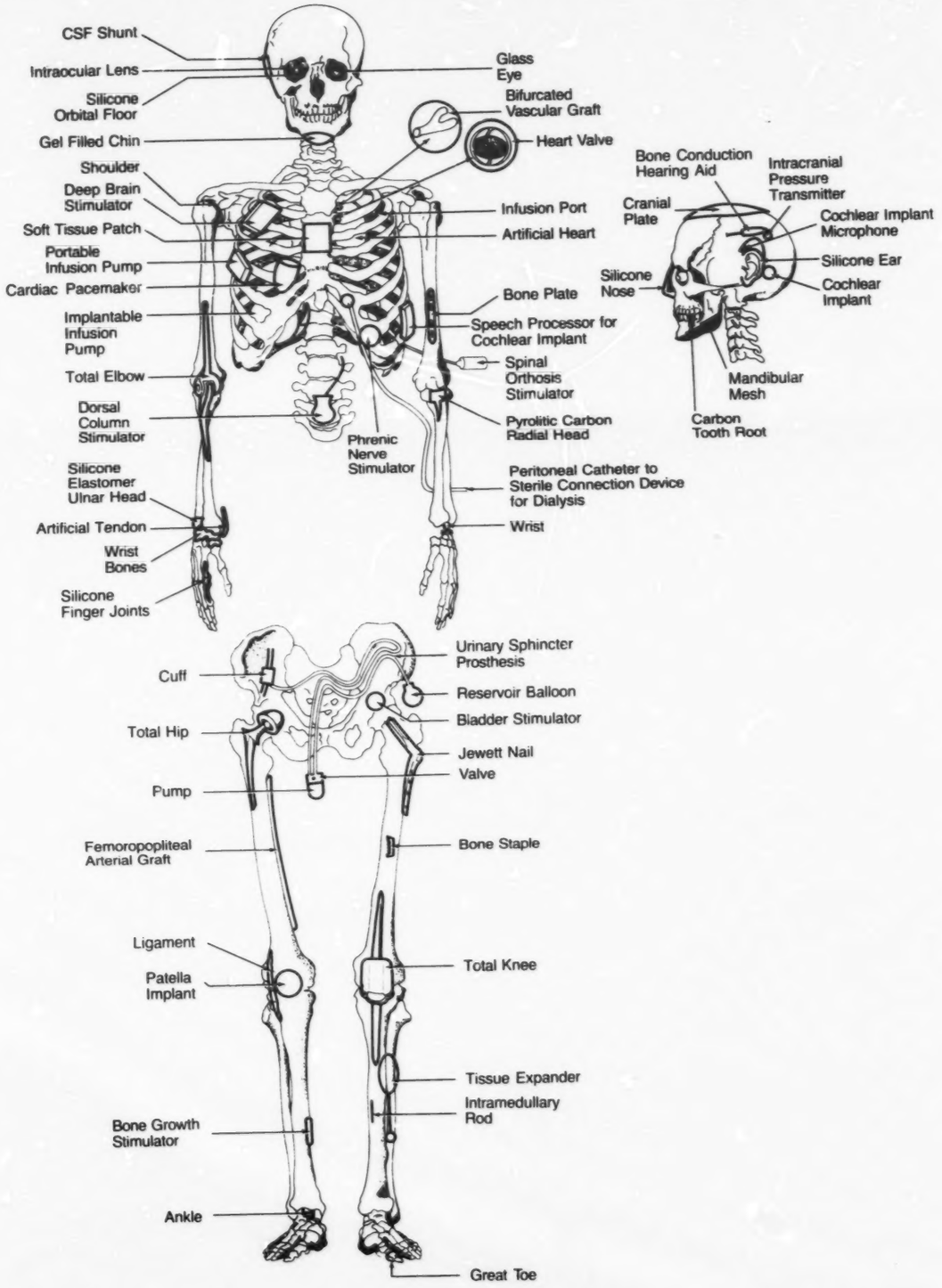
CSF Shunt
Intraocular Lens
Silicone Orbital Floor
Gel Filled Chin
Shoulder
Deep Brain Stimulator
Soft Tissue Patch
Portable Infusion Pump
Cardiac Pacemaker
Implantable Infusion Pump
Total Elbow
Dorsal Column Stimulator
Silicone Elastomer Ulnar Head
Artificial Tendon
Wrist Bones
Silicone Finger Joints
Glass Eye
Bifurcated Vascular Graft
Heart Valve
Infusion Port
Artificial Heart
Bone Plate
Speech Processor for Cochlear Implant
Spinal Orthosis Stimulator
Pyrolitic Carbon Radial Head
Phrenic Nerve Stimulator
Peritoneal Catheter to Sterile Connection Device for Dialysis
Wrist
Bone Conduction Hearing Aid
Intracranial Pressure Transmitter
Cranial Plate
Cochlear Implant Microphone
Silicone Ear
Silicone Nose
Cochlear Implant
Mandibular Mesh
Carbon Tooth Root
Urinary Sphincter Prosthesis
Cuff
Reservoir Balloon
Bladder Stimulator
Total Hip
Jewett Nail
Valve
Pump
Femoropopliteal Arterial Graft
Bone Staple
Ligament
Patella Implant
Total Knee
Tissue Expander
Intramedullary Rod
Bone Growth Stimulator
Ankle
Great Toe

The Center for Devices and Radiological Health (CDRH) is responsible for assuring the safety effectiveness, and proper labeling of medical devices. In many instances, little research information is available elsewhere, inside or outside the government, to provide the information needed as a foundation for CDRH activities. CDRH's Office of Science and Technology (OST) then performs the needed research and evaluation, sometimes in collaboration with outside institutions. Because the medical device field is broad, our laboratory program must have expertise in a variety of disciplines, including engineering, physics, biology, epidemiology, and statistics. To give people a sense of the range of devices with which we deal, we created this display.

So, meet Yorick. He's a bionic skeleton employed as a teaching aid and information source concerning CDRH activities and findings in the area of medical implants. Yorick was created in one of OST's engineering groups, the Division of Mechanics and Materials Science (DMMS).

DMMS conducts research studies that help determine product performance limits, reliability, and safety thresholds, as well as changes in the properties of materials resulting from their interaction with the service environment. The results are combined with those from other divisions to form the basis for recommendations to the public for the proper selection, use and maintenance of medical devices.

Yorick displays more than 45 implant devices as they would appear inside the body. In Yorick's head is a cochlear implant; it allows profoundly deaf patients, for the first time, to react to surrounding sounds such as sirens, bells, and changes in tone. Understanding just this one device requires the expertise found in OST's electrical and mechanical engineering, acoustics, and biology programs.

In Yorick's torso is an artificial heart similar to the one implanted in Barney Clark, the first patient to survive this operation. The artificial heart has only two chambers, while the natural heart has four.

Orthopedic implants in Yorick's arms and legs include bone plates and staples that hold bones together as they heal. Other implants, in the knees and hips, either reinforce or replace these joints. Many patients need total joint replacement because their bones are no longer strong enough to sustain the weight of the body. In Yorick's pelvis are devices that assist patients who have trouble controlling bladder functions. On his left side are a bladder stimulator and an artificial sphincter to control emptying of the bladder.

Yorick has appeared at professional meetings, schools, university lectures, training courses and health fairs. If you have time, take a few minutes to listen to him describe his implants. For more information about the activities of OST or CDRH, or to arrange for Yorick to visit your institution, contact us at the address below.

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